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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/627,657

07/28/2003

Hiromitsu Nishikawa

01272.020604.

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01/05/2010

FITZPATRICK CELLA HARPER & SCINTO

1290 Avenue of the Americas

NEW YORK, NY 10104-3800

EXAMINER

MENBERU, BENIYAM

ART UNIT

PAPER NUMBER

2625

MAIL DATE

DELIVERY MODE

01/05/2010

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.



### ***Response to Arguments***

1. Applicant's arguments filed September 24, 2009 have been fully considered but they are not persuasive.

Applicant stated in the Remarks on page 9, that the system of Higashikata et al '968 does not disclose

“(i) setting a function which represents a relation between color signal and a total use amount of the color materials and in which a change in the total use amount of the color materials of the input color signal is continuous with a change in the input color signal, wherein the function is set based on a color signal of a representative color and a total use amount of the color materials of the representative color, (ii) calculating the total use amount of the color materials corresponding to the input color signal by using the set function, and (iii) determining the combination of color material signals corresponding to the input color signal based on the obtained plurality of combinations of the plurality of kinds of color materials, by using the calculated total use amount of the color materials “

However Examiner disagrees because the system of Higashikata et al '968 does disclose setting “(i) setting a function which represents a relation between color signal and a total use amount of the color materials and in which a change in the total use amount of the color materials of the input color signal is continuous with a change in the input color signal, wherein the function is set based on a color signal of a representative color and a total use amount of the color materials of the representative color (page 5, paragraph 58; total coverage restriction function T can be designated/set to determine the total use amount for example by setting to 200%; page 1, paragraph 8, 12; total coverage is  $Y+M+C+K$  (total use amount); page 4, paragraph 53; page 7,

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paragraph 82, 83; YMCK is related to a specific representative color  $L^*a^*b^*$ ; thus the restriction function T which is based on total  $Y+M+C+K$  is related to representative color  $L^*a^*b^*$ );

(ii) calculating the total use amount of the color materials corresponding to the input color signal by using the set function (page 4, paragraph 53; **page 5, paragraph 58; total coverage restriction function T can be designated/set to determine the total use amount**; page 8, paragraph 93; for given input  $L^*a^*b^*$ , the coverage function is used for checking), and (iii) determining the combination of color material signals corresponding to the input color signal based on the obtained plurality of combinations of the plurality of kinds of color materials, by using the calculated total use amount of the color materials (page 8, paragraph 92, 93; page 9, paragraph 102, 103; the input  $L^*a^*b^*$  is used to determine the optimized K value from plural K values (i.e. plural YMCK combinations) which determines the YMCK combination value; In Figure 9, step s63, the first YMCK combination is based on the K value calculated in step s64 when coverage is satisfied and the second YMCK combination is based on the K value calculated in step s65 when coverage is not satisfied; this determination of a YMCK combination is based on the restriction coverage function T which is designated at a given level/percentage (page 4, paragraph 53); the designation of a coverage restriction defines the calculation of a total use amount; Figure 12 shows the function “T”.) “.

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 3, 6, 8, 9, 10, 20-22 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent Application Publication No. US 2001/0035968 A1 to Higashikata et al.

Regarding claim 1, Higashikata et al '968 discloses a color processing method of determining a combination of color material signals of a plurality of kinds of color materials for reproducing a color represented by an input color signal (page 7, paragraph 80, 81, 82; combination of YMCK value is determined based on input  $L^*a^*b^*$ ), said method comprising of:

using a processor to perform the steps of:

obtaining a plurality of combinations of the plurality of kinds of color materials, each of the combinations being capable of reproducing a color represented by the input color signal (page 8, paragraph 91, 92, 93; plurality of K values corresponding to  $L^*a^*b^*$  values are chosen to determine the combination of YMCK value to determine if it is below coverage restriction);

setting a function (page 5, paragraph 58; total coverage restriction function T can be designated/set to determine the total use amount for example by setting to

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**200%**) which represents a relation between color signal and a total use amount of the color materials and in which a change in the total use amount of the color materials of the input color signal is continuous with a change in the input color signal (Figure 12 restriction function represented by “T”; page 9, paragraph 102, 103; the “T” function is continuous since it is a straight horizontal line;), wherein the function is set based on a color signal of a representative color and a total use amount of the color materials of the representative color (page 1, paragraph 8, 12; total coverage is  $Y+M+C+K$  (total use amount)); page 4, paragraph 53; page 7, paragraph 82, 83; YMCK is related to a specific representative color  $L^*a^*b^*$ ; thus the restriction function T which is based on total  $Y+M+C+K$  is related to representative color  $L^*a^*b^*$ ;

calculating the total use amount of the color materials corresponding to the input color signal by using the set function (page 4, paragraph 53; **page 5, paragraph 58; total coverage restriction function T can be designated/set to determine the total use amount**; page 8, paragraph 93; for given input  $L^*a^*b^*$ , the coverage function is used for checking); and

determining the combination of color material signals corresponding to the input color signal based on the obtained plurality of combinations of the plurality of kinds of color materials, by using the calculated total use amount of the color materials (page 8, paragraph 92, 93; page 9, paragraph 102, 103; the input  $L^*a^*b^*$  is used to determine the optimized K value from plural K values (i.e. plural YMCK combinations) which determines the YMCK combination value; In Figure 9, step s63, the first YMCK combination is based on the K value calculated in step s64 when coverage is satisfied

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and the second YMCK combination is based on the K value calculated in step s65 when coverage is not satisfied; this determination of a YMCK combination is based on the restriction coverage function T which is designated at a given level/percentage (page 4, paragraph 53); the designation of a coverage restriction defines the calculation of a total use amount; Figure 12 shows the function "T".).

Regarding claim 3, Higashikata et al '968 teaches all the limitations of claim 1. Further Higashikata et al '968 discloses color processing method as claimed in claim 1, wherein said step of determining the combination includes determining the combination corresponding to the input color signal with reference to a table (page 4, paragraph 52; K values are determined based on table storing parameters), which determines the combination of the plurality of kinds of color material so that the total use amount of the color materials is determined according to the combination of the plurality of kinds of color materials and meets the function for the total use amount within a range of for the input color signal (page 7, paragraph 79, 80, 81; optimal K value chosen in addition to the YMC value satisfies function for the total YMCK data shown in Figure 12; the solid curve in Figure 12 shows total YMCK data when optimal K is selected for generating the YMCK data (page 9, paragraph 102, 103); Figure 2 shows range of input  $L^*a^*b^*$  values used for selecting K values (page 4, paragraph 44, 45, 46)).

Regarding claim 6, Higashikata et al '968 teaches all the limitations of claim 1. Further Higashikata et al '968 discloses the color processing method as claimed in claim

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1, wherein of the plurality of kinds of color materials comprise yellow, magenta, cyan, and black (page 3, paragraph 41; YMCK).

Regarding claim 8, Higashikata et al '968 teaches all the limitations of claim 1. Further Higashikata et al '968 discloses the color processing method as claimed in claim 1, wherein the color materials comprise inks (page 1, paragraph 8).

Regarding claim 9, Higashikata et al '968 teaches all the limitations of claim 1. Further Higashikata et al '968 discloses the color processing method as claimed in claim 1, wherein the color materials comprise toners (page 1, paragraph 8).

Regarding claim 10, see rejection of claim 1 as shown above. The method of Higashikata et al '968 renders obvious the apparatus of claim 10.

Regarding claim 20, see rejection of claim 1 as shown above. The method of Higashikata et al '968 renders obvious the programming steps of claim 20.

Regarding claim 22, Higashikata et al '968 teaches all the limitations of claim 1. Further Higashikata et al '968 discloses color processing method as claimed in claim 1, wherein said determining step determines the combination of the color material signals by selecting a combination of the color material signals nearest to a combination of the color material signals corresponding to input color signal of the calculated total use amount, from the plurality of combinations of the plurality of kinds color materials (page 8, paragraph 92, 93; page 9, paragraph 102, 103; the input  $L^*a^*b^*$  is used to determine



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the optimized K value from plural K values (ie plural YMCK combinations) which determines the YMCK combination value; The restriction value "T" reads on the calculated total use amount since it is used to determine the appropriate K value to use to generate the YMCK combination; Figure 12 shows the function "T"; As shown in Figure 12, when  $L^*$  is close to 0, the selected combination of YMCK has total use amount which gets nearer and nearer to the coverage restriction T wherein the coverage restriction T can represent a combination of color materials which is maximum coverage.).

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication No. US2001/0035968 A1 to Higashikata et al in view of U.S. Patent No. 7190485 to Couwenhoven et al.

Regarding claim 4, Higashikata et al '968 teaches all the limitations of claim 1. However Higashikata et al '968 does not disclose a color processing method as claimed in claim 1, wherein the function is a spline function.

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Couwenhoven et al '485 discloses a color processing method wherein the function is a spline function (column 4, lines 39-50; column 8, lines 33-41, 52-66; spline curve used for volume (total amount) function).

Having the system of **Higashikata et al '968** and then given the well-established teaching of **Couwenhoven et al '485**, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the system of **Higashikata et al '968** as taught by **Couwenhoven et al '485**, since **Couwenhoven et al '485** stated in col. 8, Lines 55-66, such a modification would provide ink volume data at arbitrary input code value through use of interpolation.

5. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication No. US2001/0035968 A1 to Higashikata et al in view of U.S. Patent No. 7190485 to Couwenhoven et al further in view of U.S. Patent No. 6058207 to Tuijin et al further in view of U.S. Patent No. 7102785 to Tamagawa.

Regarding claim 5, Higashikata et al '968 in view of Couwenhoven et al '485 teaches all the limitations of claim 4. However Higashikata et al '968 in view of Couwenhoven et al '485 does not disclose color processing method as claimed in claim 4, wherein said step of setting the function includes displaying a function for a total use amount for a predetermined color on a display device.

Tuijin et al '207 discloses displaying a function for a total use amount for a predetermined color on a display device (column 6, lines 57-67; column 7, lines 1-12; "Total ink value" is displayed.).

Having the system of ***Higashikata et al '968 in view of Couwenhoven et al '485*** and then given the well-established teaching of ***Tuijin et al '207***, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the system of ***Higashikata et al '968 in view of Couwenhoven et al '485*** as taught by ***Tuijin et al '207***, since ***Tuijin et al '207*** stated in column 3, lines 6-21, such a modification would provide flexibility for color correction.

However Higashikata et al '968 in view of Couwenhoven et al '485 does not disclose setting the function based on input by an operation on the display.

Tamagawa '785 discloses setting the function based on input by an operation on the display (Figure 22; column 14, lines 48-67; column 15, lines 1-3; Operator enters the smoothing range.).

Having the system of ***Higashikata et al '968 in view of Couwenhoven et al '485*** and then given the well-established teaching of ***Tamagawa '785***, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the system of ***Higashikata et al '968 in view of Couwenhoven et al '485*** as taught by ***Tamagawa '785***, since ***Tamagawa '785*** stated in column 2, lines 3-35, such a modification would provide compensation for artifact in the color profile generation.

6. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication No. US2001/0035968 A1 to Higashikata et al in view of U.S. Patent No. 6172692 to Huang et al.

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Regarding claim 7, Higashikata et al '968 teaches all the limitations of claim 1. However Higashikata et al '968 does not disclose the color processing method as claimed in claim 1, wherein the plurality of kinds of color materials comprise yellow, magenta, cyan, black, and light magenta, having lower concentration than the magenta, and light cyan, having lower concentration than the cyan.

Huang et al '692 discloses wherein the plurality of kinds of color materials comprise yellow, magenta, cyan, black, and light magenta, having lower concentration than the magenta, and light cyan, having lower concentration than the cyan (column 6, lines 62-67; column 7, lines 10-15; diluted reads on lower concentration).

Having the system of **Higashikata et al '968** and then given the well-established teaching of **Huang '692**, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the system of **Higashikata et al '968** as taught by **Huang '692**, since **Huang '692** stated in col. 1, Lines 19-32, such a modification would provide the color material for generating photograph type images.

7. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication No. US 2001/0035968 A1 to Higashikata et al in view of U.S. Patent No. 5739828 to Moriyama et al.

Regarding claim 21, Higashikata et al '968 teaches all the limitations of claim 1. However Higashikata et al '968 does not disclose the color processing method as claimed in claim 1, wherein the representative color is a color having a highest saturation in each of hues of colors of the plurality of kinds of color materials.

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Moriyama et al '828 discloses the color processing method as claimed in claim 1, wherein the representative color is a color having a highest saturation in each of hues of colors of the plurality of kinds of color materials (column 10, lines 61-67; column 11, lines 1-2, 17-25; input can be black which is highest saturation in black ink K or one of color Y, M, or C).

Having the system of **Higashikata et al '968** and then given the well-established teaching of **Moriyama et al '828**, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the system of **Higashikata et al '968** as taught by **Moriyama et al '828**, since **Moriyama et al '828** stated in col. 22, Lines 40-59, such a modification would provide high quality image output.

### ***Other Prior Art Cited***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent Application Publication No. US2005/0151788 A1 to Yao et al disclose printing system.

U.S. Patent Application Publication No. US2005/0151789 A1 to Yao et al disclose printing system.

### ***Conclusion***

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9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BENIYAM MENBERU whose telephone number is (571) 272-7465. The examiner can normally be reached on 8:00AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Moore can be reached on (571) 272-7437. The fax phone number for the organization where this application or proceeding is assigned is **571-273-8300**.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the customer service office whose telephone number is (571) 272-2600. The group receptionist number for TC 2600 is (571) 272-2600.

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***Patent Examiner***

Beniyam Menberu

/Beniyam Menberu/  
Examiner, Art Unit 2625

12/29/2009

/David K Moore/

Supervisory Patent Examiner, Art Unit 2625